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ABSTRACT

During the 1982-83 school year the Austin Independent School District implemented a successful bilingual preschool project. However, class A was more successful than class B in terms of results on the Peabody Picture Vocabulary Test-Revised. To understand what factors may have led to greater effectiveness, data were gathered from the two classes with structured classroom observations and teacher interviews. Based on the results, the following recommendations are made: (1) increase the amount of time dedicated to formal and informal learning; (2) reduce the time students spend working in independent learning centers; (3) use two languages for instruction, but use English as the predominant language; (4) use a variety of instructional materials, including high level thinking materials; (5) rotate students to new groups for instruction when their language level changes; (6) conduct the entire instructional period in one language and then translate briefly to students who do not understand; and (7) set language development as the main goal of the class for the school year. (BW)

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SAME BILINGUAL PRESCHOOL PROJECT, DIFFERENT GAINS; WHAT HAPPENED?

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SAME BILINGUAL PRESCHOOL PROJECT, DIFFERENT GAINS; WHAT HAPPENED?

INTRODUCTION

During the 1982-83 school year the Austin Independent School District (AISD) implemented a sucessful bilingual preschool project. The data collected for the evaluation of this project allowed us to compare classes within the Project to identify factors that might lead to greater academic achievement gains and language development.

The AISD Bilingual Preschool Project consisted of six classes in five elementary neighborhood schools. The Project was planned to address the needs of the four-year olds who were classified as students with limited English proficiency (LEP). The main objective of the Project was the following:

- Project students will attain a higher level of skill in language and concept development as measured by the Peabody Picture Vocabulary Test- Revised version (PPVT-R).

Other educational goals of the Project were to teach children to be independent, to learn appropriate school behavior, and to learn to interact with peers and adults.

WHAT WERE THE CHARACTERISTICS OF THE PROJECT?

The Project had the following characteristics:

- Teachers were certified in Early Childhood Education and were bilingual in English and Spanish.
- Teachers used two languages for instruction, English and Spanish.
- English was the predominant language for instruction. However, basic concepts and ideas were taught in the primary language of the student.
- It was planned that at least 50% of the regular school day (390 minutes) would be dedicated to instruction.
- Each preschool class included three students who were selected to be in the class as language models for their peers.

- The Bilingual Education Curriculum Program (BECP) was the core set of instructional materials. However, teachers were allowed to supplement their lessons drawing materials and activities from other sources.

- Each class had a bilingual aide helping the teacher with instruction and class management.

- Parental involvement activities consisted of having parents attend workshops where parenting strategies were discussed. Also, each unit of instruction had a home activity.

HOW WERE THE PARTICIPANTS OF THE PROJECT SELECTED?

The participants of the Project were randomly selected from a pool of applicants who were identified as LEP. In the AISD students are considered LEP if the following conditions were given:

- A language other than English (for the purpose of this project Spanish) is reported as being spoken at home, and

- The student scores below criterion on the Primary Acquisition of Language Test (PAL).

A random selection of students was used to give each LEP applicant an equal opportunity of being selected.

The participating model students were selected from the pool of applicants to the Project who obtained the highest scores on the PAL test, English version. There were three model students in each class of the Project.

DID THE BILINGUAL PRESCHOOL PROJECT MEET ITS ACADEMIC ACHIEVEMENT OBJECTIVES?

Project participants were tested twice during the school year with the PPVT-R. The following finding were obtained from the results of testing:

- The Bilingual Preschool Project had an impact on the English language skills of the participants as demonstrated by the gain obtained on the PPVT-R. Pre- and posttested LEP students obtained a net gain of 9.8 standard score points in English.

Furthermore, follow-up procedures indicate that there was a lasting effect. Data from the Iowa Tests of Basic Skills (ITBS) taken at kindergarten and first grade demonstrated that the former participants of the Project obtained higher scores than LEP students who did not participate in the District's preschool programs.

Figure 1 shows the results of the pre- and posttest for two of the classes of the Project and the Project overall (82-83 school year).

GROUP	PRETEST AVERAGE SCORES (SD)	POSTTEST AVERAGE SCORES (SD)	AVERAGE GAIN (SD)	t-value	PROB. alpha
PROJECT n=85	73.36 (21.26)	81.35 (17.72)	7.98 (13.11)	5.62	.05
CLASS A* n=12	54.25 (26.70)	74.25 (20.30)	20.5 (18.81)	3.77	.003
CLASS B* n=11	66.90 (19.61)	66.36 (19.96)	.55 (10.59)	.17	.86

* Includes only LEP students with pre- and posttest valid scores.

FIGURE 1. PPVT-R STANDARD SCORES GAINS FOR THE BILINGUAL PRESCHOOL PROJECT AND FOR TWO CLASSES OF THE PROJECT (82-83).

The results presented in Figure 1 indicate that class A obtained an average gain of 20.5 standard score points. This difference is statistically significant according to the t-test conducted. However, the gain for class B was .55. The difference between pre- and posttest is not statistically significant.

Furthermore, an analysis of covariance was conducted to learn whether the class average of the posttests were different when adjusted for differences in pretest. It was found that there was a significant difference between posttest averages of the two classes compared. The results are presented in Figure 2.

SOURCE OF VARIATION	SS[1]	DF[2]	MS[3]	F	PROB
COVARIATES					
PRE	3873.0	1	3873.0	21.61	.001
MAIN EFFECTS					
CLASS	1468.2	1	1468.3	8.19	.010
EXPLAINED	5341.3	2	2670.6	14.91	.001
RESIDUAL	3583.2	20	179.2		
TOTAL	8924.4	22	405.7		

1: Sum of Squares 2: Degrees of Freedom 3: Mean Square

FIGURE 2. ANALYSIS OF COVARIANCE OF PPVT POSTTEST AVERAGES BETWEEN TWO SELECTED CLASSES OF THE BILINGUAL PRESCHOOL PROJECT.

WAS ONE CLASS OF THE PROJECT MORE EFFECTIVE THAN THE OTHER CLASS COMPARED?

Defining effectiveness operationally as the attainment of high adjusted scores in the results of the PPVT-R, it can be stated that class A was more effective than class B. Therefore, it can be concluded that a greater development of language skills and greater academic achievement took place in class A than class B. For the purposes of this study, effectiveness is defined only in terms of results of one test. We are not considering other effects that could have happened in the classes compared such as the development of greater self-esteem, or learning to be more independent.

To understand what factors may have led to greater effectiveness, we compared the data gathered from the two classes with the following research techniques:

- Structured Classroom Observations, and
- Teacher Interviews.

The description of the instruments used, the procedures followed, and the findings obtained follow.

A. Structured Classroom Observations

The main purpose of the structured classroom observations was to document the objectives of the Project concerning time dedicated to instruction and language used to administer instruction. The structured classroom observations focused on the experience of a particular student during the 390 minutes of the school day. A bilingual observer recorded information on a form developed by the Office of Research and Evaluation of the AISD for this specific project. The unit of observation of the form was a school-day minute. The selected student was observed during an entire day and minute-by-minute records on several variables were taken of his/her personal experience. A copy of the form is included in Attachment A.

Classroom observations were conducted from March 18 to April 27, 1983, the sixth and seventh month of the school year for this Project. We observed each Project's class three times. Teachers did not know when their classes were going to be observed.

Because the language skills of the participants were heterogeneous, the selection of the students to be observed was based on language level. For each of the observations in each school a student from a different level was observed. A language level classification was used. The categories were the following:

A students: Very low English proficiency as demonstrated by a range of scores on the PAL from 1 to 30. Spanish monolinguals were included in this category.

B students: Low English proficiency as demonstrated by a range of scores on the PAL from 31 to 69

C students: Average English proficiency and above as demonstrated by a range of scores on the PAL of 70 or above.

The observer selected a student from each category to be observed at random, after the teacher had introduced all the children of the class. The teacher did not know which student was observed.

For the purposes of this study the following variables were considered:

- Type of Instructional Activities, and
- Language of Instruction.

Each variable considered is discussed below.

A.1 TYPES OF INSTRUCTIONAL ACTIVITY

During each minute of the school day, the activities that took place were recorded into one of the following categories:

- Formal Learning,
- Informal Learning,
- Independent Learning, and
- Other.

The definition of each category was the following:

Formal Learning: Activities aimed at the presentation of new concepts, ideas, new words, and the development of visual and auditory skills were recorded as formal learning. In the Project these activities took place in groups of less than six students.

Informal Learning: Activities whose objective was the reinforcement of knowledge already learned during formal learning and other activities such as sharing thoughts and/or anecdotes with the teacher, singing songs, listening to stories, dancing, and playing group games were coded as informal learning.

Independent Learning: The period of time when a student is allowed to be in a learning center working in an activity such as painting at an easel or working with blocks was recorded as independent learning. It is acknowledged that the activities that took place in these centers allowed students to explore educational materials, express their creativity, learn social interaction skills, and also improve on their language skills. The activities at the learning centers took place in groups of less than four students. Because there was little interaction with adults it is referred to as independent.

Other: The period of time used by the students for activities other than the ones mentioned above was classified as "other." They include meals, naps, recess, transitions from one activity to the next, bathroom visits, and idle time.

Findings Associated with Time Dedicated To Instructional Categories

Figure 3 shows a comparison of the number of minutes recorded for each of the instructional categories defined above for each of the classes observed.

CLASS OBSERVED	FORMAL LEARNING	INFORMAL LEARNING	INDEPENDENT LEARNING	OTHER	TOTAL
A-1	38	117	57	178	390
A-2	115	38	43	194	390
A-3	116	34	42	198	390
TOTAL FOR CLASS	269	189	142	570	1170
AVERAGE (SD)	89.6 (44.7)	63 (46.8)	47.3 (8.4)	190 (10.5)	390
PERCENTAGE OF TOTAL	22.9%	16.2%	12.1%	48.7%	100%
B-1	37	58	71	224	390
B-2	44	64	87	195	390
B-3	23	87	77	203	390
TOTAL FOR CLASS	104	209	235	622	1170
AVERAGE (SD)	34.7 (10.7)	69.7 (15.3)	78.3 (8.1)	207.3 (14.9)	390
PERCENTAGE OF TOTAL	8.8%	17.9	20.1	53.1%	100%

FIGURE 3. COUNT OF MINUTES RECORDED FOR EACH INSTRUCTIONAL CATEGORY.

The data presented in Figure 3 indicates that a major difference in the use of the school-day time between the classes compared was the time dedicated to formal learning and independent learning. Class A dedicated on the average 23% (90 of 390 min.) of the time to formal learning and 12% (47 of 390 min.) to independent learning. Class B, instead, dedicated on the average 9% (35 of 390 min.) to formal learning and 20% (78 of 390 min.) to independent learning.

A.2 LANGUAGE OF INSTRUCTION

Language of instruction was another variable recorded during the structured classroom observations. During each minute of instruction observed the language heard by the student was recorded.

Findings Associated With Language of Instruction

Figure 4 shows the number of minutes recorded for each language during the periods of instruction for each class observed. The data collected during periods of formal and informal learning were aggregated.

CLASS	ENGLISH	SPANISH	BOTH	BLANK	TOTAL
A-1	136	19	0	0	155
A-2	96	57	0	0	153
A-3	98	40	11	1	150
TOTAL	330	116	11	1	458
AVERAGE (SD)	110 (22.5)	38.6 (19.0)	3.7 (6.4)	0.3 (0.5)	152.6 (2.5)
% OF CLASS	72.1%	25.2%	2.4%	0.2%	100%
B-1	91	0	0	4	95
B-2	63	36	9	0	108
B-3	90	20	0	0	110
TOTAL	244	56	9	4	313
AVERAGE (SD)	81.3 (15.9)	18.6 (18.0)	3.0 (5.2)	1.3 (2.3)	104.3 (8.1)
% OF CLASS	77.9%	17.8%	2.8%	1.2%	100%

1: The observer heard two languages during the observed minute.
2: The observer did not hear any languages spoken during the minute.

FIGURE 4. COUNT OF MINUTES DURING FORMAL AND INFORMAL LEARNING BY LANGUAGE OF INSTRUCTION.

The data presented in Figure 4 yielded the following findings:

- o There was a small difference in the proportion of time dedicated to instruction by language and school.
- o The main difference, however, between the classes is not in the proportion of time dedicated to instruction by language but in the amount of time dedicated to instruction overall.

B. Teacher Interview

Interviews were conducted with each of the teachers of the AISD Bilingual Preschool Project. The purpose of the interviews was to address the following research questions:

- o What goals were set by each teacher for their classes?
- o What set of instructional materials were used?
- o What criteria were used by teachers to form groups for instruction?
- o What decisions were made with respect to language of instruction?

The interviews conducted followed a preestablished format. The questions included in this format were related to the objectives of the Project and other descriptive information. The questions asked were open-ended. Topics were followed up when an illustration or more information was needed.

Interviews were conducted with each teacher during the last week of classes, May 23 to May 27, 1983. The interviews took place at each school. Teachers were assured that comments shared during the interview would not affect whatsoever their professional evaluation and that all the information collected would remain anonymous.

The results of the interviews with the teachers of the classes compared in this paper are presented according to the topics addressed.

FINDINGS

B.1 Teacher Goals

Teachers were asked to identify the goals they set for their classes. It was assumed that the stated goals indicate the areas in which teachers would concentrate their activities and efforts. We found differences in the goals set by the teachers. The teacher from class A had goals related almost exclusively to developing language skills. The other teacher, however, emphasized developing the affective area of the students. The following responses were given by each teacher:

Goals set by teacher A:

1. "For the Spanish dominant students to learn English."

2. "For the English dominant students to learn Spanish."

3. "To improve overall language skills."

Goals set by teacher B:

1. "To teach students to communicate with each other."

2. "To teach students to get along and see each other as an important individual."

3. "To get students ready for next grade level so they would not feel lost."

B.2 Set of Instructional Materials

All teachers of the Project used the Bilingual Education Curriculum Program (BECP), a set of instructional materials developed by the Southwest Educational Development Laboratory. However, teachers were allowed to use other materials to supplement instruction. It was found during the previous years of the Project that this set of materials was adequate for students with very low English skills and Spanish monolinguals but it was not challenging to students at a higher level of language development.

Differences between the two teachers of the study were noted once again. Teacher B used it 80% of the time while teacher A reported using it only 35% of the time. These percentages were estimates given by the teachers.

Another difference between these two classes that emerged from the interviews was the use of a book of stories which consists of mathematical problems and high level thinking. Teacher A read stories from this book, Real Math 1, twice a week since February. The teacher shared these comments:

> "The stories from Real Math exposed the students to math concepts and high level thinking. The majority of the students were able to follow the stories. My emphasis was on the stories and there was a secondary interest on the math concepts elaborated. About 50% of the students did not grasp the math concept, but all gained oral language development and thinking skills. After I told the story, I explained the conclusion and students after an explanation understood the answers or solutions given."

Because the teacher that used this type of instructional materials obtained higher than average achievement gains, it is appropriate to raise the following research question:

- Does the use of high level thinking instructional materials lead to a higher development of language skills among limited English proficient students?

B.3 Groups for Instruction

All teachers of the Project reported using small groups (4-6 students per group) for instruction. The most common criterion used to form the small group by teachers was language level. Students assigned each student to a group based on their own observations and information provided by the results of the PAL testing.

We asked the teachers whether they have changed the groups through the year. There were differences in the responses given by the teachers compared. Teacher A reported moving the children from one group to another when, in her judgement and observation, the language level of the students changed. The other teacher kept the groups stable through the year with few changes and those based upon discipline problems.

B.4 Language Question

In bilingual education projects where language heterogeneity among the students is a common condition, instructors are faced with the question of what language to use during periods of instruction with the entire class. The alternatives have been to "stay clean" or to "flip-flop." The former term refers to conducting the entire session of instruction in only one language, though some of the students may be lost. Both teachers compared in this study reported using only one language during the period of instruction and translating briefly to those who did not understand at the end of the period.

SUMMARY AND RECOMMENDATIONS

Two classes with great differences in academic achievement were compared to identify factors that might account for differences in gains.

The following recommendations are presented as hypothesis to be tested that may lead to Project enhancement:

1. Increase the time dedicated to formal and informal learning.
2. Reduce the time students spent working in independent learning centers.
3. Use two languages for instruction but English should be the predominant language of the class.
4. Use a variety of instructional materials that are adequate to the language level of the students, including high level thinking materials.
5. Rotate students to new groups for instruction when the language level of the students change.
6. Conduct the entire instructional period in one language and then translate briefly to students who do not understand.
7. Set language development as the main goal of the class for the school year.

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| Hours= Page= | LANG | | TYPES OF INSTRUCT | | | INSTRUC-TOR | | | CONTENT AREAS | | |

SIDE B page 14

OBSERVATION NO. ____-____-____

Name of Student _____

School: _____

Observer: _____

Date: _____

Lang. Group: _____

Hours= Page=	LANG	TYPES OF INSTRUCT			INSTRUC-TOR			CONTENT AREAS												
	LANGUAGE OF INSTR	LANGUAGE OF INTER	FORMAL	INFORMAL LEARNING	OTHER	TEACHER	AIDE	OTHER	LANGUAGE ARTS	SCIENCE	SOCIAL STUDIES	MATH	ART	P.E.	MUSIC	GROUP SIZE		OFF-TASK		LEP-MODEL INTERAC
31																				
32																				
33																				
34																				
35																				
36																				
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